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BUELLTON UPLANDS GROUNDWATER BASIN MANAGEMENT PLAN

Volume 1 Plan

Adopted by:

SANTA YNEZ RIVER
WATER CONSERVATION DISTRICT

CITY OF BUELLTON

Based upon the recommendations of:

The Buellton Uplands
Groundwater Basin
Management Advisory Committee

October 1995

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Recognizing that groundwater is a valuable natural resource and should be managed to ensure it's safe production and quality, the California Legislature passed the "Groundwater Management Act," commonly referred to as AB 3030 (California Water Code & 10750 et seq.). This Act provides local public agencies with enhanced authority over their groundwater resources through the development and implementation of groundwater management plans. The Act encourages such local agencies within the same groundwater basin to work cooperatively by adopting and implementing a coordinated groundwater management plan.

The Santa Ynez River Water Conservation District (Parent District) was established in 1939, for the primary purpose of protecting water rights along the lower Santa Ynez River. After holding public meetings, the Parent District passed a resolution indicating that it would develop and implement a groundwater management plan for the Buellton Uplands Basin. As the only local agency with responsibility to protect and enhance water rights and supplies throughout the Basin, the District received public support to develop a plan.

In order to develop a coordinated plan, the Parent District entered into a Memorandum of Understanding (MOU) with the City of Buellton. The City overlies about 950 acres within the Basin (18,600 acres) and serves a population of about 3,700 people.

The Parent District retained a professional mediator who formed an Advisory Committee to produce plan recommendations. The Committee consisted of City representatives and overlying landowners (or their representatives) from outside the City limits. The Advisory Committee worked for over a year, reaching consensus on a recommended plan after consultations with various technical and legal consultants. This Plan is based on the recommendations of the Advisory Committee.

The Basin was found to be in surplus, not overdraft as had been indicated previously. As a result of this conclusion and the need for more hydrologic information, the Plan emphasizes an expanded groundwater monitoring program. It includes the adoption of a Basin management matrix that correlates key well level and water quality parameters to strategies for protecting the Basin. These strategies include various conservation measures that could be implemented by Buellton and the Parent District, depending on the hydrologic status of the Basin in future years. The Plan also includes various actions to maintain water quality.

Oversight for the implementation of the Plan will be undertaken by a Basin Management Oversight Committee that will include representation from the City of Buellton and overlying landowners in the Basin. The Oversight Committee will provide ongoing recommendations to the Parent District on routine monitoring activities and on the development and implementation of any additional measures or strategies that might be required at key decision points in future years.

Specific actions proposed by the Plan are summarized below.

Development of an Expanded Groundwater Monitoring Program:

1. The Parent District, in conjunction with Santa Barbara County, will expand the number of wells monitored in the Basin to include areas that are not currently monitored, especially wells penetrating the main deep aquifer. Hydrographs will be prepared that demonstrate trends over time for each of the indicator wells.

2. The Parent District periodically will evaluate whether the wells selected as indicators are still appropriate for Basin management, and if necessary, either select different wells or add additional wells to its monitoring inventory.

3. The Parent District will consider establishing two wells, one in the central part of the Basin to be used for monitoring groundwater levels and another in the western part of the Basin for water quality. These actions will be reviewed periodically and considered as funds are available in the future.

Adoption of a Basin Management Matrix:

1. The Parent District will adopt a Basin management matrix that correlates key well level and water quality parameters to strategies for protecting the Basin. The matrix establishes three action phases that primarily involve water conservation measures. These action phases are intended to keep the Basin from going into overdraft.

2. The Parent District will establish a Basin Management Oversight Committee to oversee the implementation of the data monitoring and evaluation efforts. The Oversight Committee will confer with the Parent District's technical consultant in applying the matrix, and will recommend appropriate actions to the Parent District.

3. The Parent District will review its current groundwater charges to determine whether they are adequate to carry out the implementation of the measures outlined in this Plan.

Conservation Measures:

1. Using the experience of the City of Buellton during the 1991-1992 drought and guidance from the "Memorandum of Understanding Regarding Urban Water Conservation in California", the Parent District identified various conservation strategies for possible implementation within the Buellton Uplands Basin.

2. The City of Buellton, whose representatives will be included in the Basin Management Oversight Committee, may integrate both currently recommended and future conservation measures from this Plan with its existing ordinances and any conservation program requirements it may have otherwise. After consultation with the Parent District, the City may then implement the integrated conservation plan for the appropriate phase within the City, after considering its particular needs at the time.

3. The Parent District will follow an analogous procedure to implement its conservation plan outside the City of Buellton within the Buellton Uplands Basin.

Water Quality Strategies:

1. The Parent District, in coordination with the County Department of Environmental Health, will update and maintain an inventory of all wells in the Basin.

2. The Parent District will pursue its program for identifying wells that have been abandoned and will refer owners to the County for compliance with the appropriate abandonment procedures.

3. The Parent District, in coordination with the County, will evaluate whether the well destruction standards that apply to the Basin are adequate. Appropriate changes will be made, as necessary.

4. The requirement to abandon wells correctly and the need to maintain septic systems effectively to prevent groundwater contamination will be incorporated into the District's groundwater conservation education program.

Oversight of the Basin Management Plan:

1. The Parent District will appoint a Basin Management Oversight Committee with representation of overlying landowners similar to the membership of the Advisory Committee. Oversight Committee membership will be

recruited from among the various stakeholder groups in the Basin. These groups include the City of Buellton, homeowner association/mutual water companies, and landowners involved in farming, ranching or other pursuits potentially using significant amounts of groundwater.

2. The Parent District will convene the Oversight Committee under the following circumstances:

   - On an annual basis to examine both data collected through the Basin monitoring program and any information developed regarding Basin demand and recharge. The Oversight Committee may make recommendations to the Parent District, including those involving whether new wells need to be added or substituted in the monitoring program.
   - To develop a Basin management matrix using data gathered from the groundwater monitoring program and other sources, once the monitoring program is fully operational.
   - In response to a trigger point being reached in the Basin management matrix, to prepare a recommendation to the Parent District as to whether moving to a new action phase is warranted. This would apply either to a situation in which Basin conditions appeared to be worsening as well as to Basin recovery.
   - To provide recommendations to the Parent District regarding the addition or substitution of conservation measures or replenishment strategies that are not included in this Plan. These changes would require a Plan amendment.
   - To develop conservation measures under Phase 3 should there be an extreme, prolonged drought or overdraft condition in the Basin that is not reversed by Phase 2 measures. These conservation measures would require a Plan amendment.
   - To develop a proposal for a water allotment/pump tax measure under Phase 2 with input from agricultural users and experts that is representative of agricultural interests in the Basin.

3. The Parent District will confer with the Oversight Committee regarding any proposals that might be adopted by the Parent District that could impact overlying landowners and the management of groundwater in the Basin. Prior notice of impending decisions will be provided.

1.0 Introduction:

This Plan provides for management of the groundwater resources of the Buellton Uplands Basin. It is based on a consensus report from the Buellton Uplands Groundwater Basin Management Advisory Committee, whose members included representatives of the City of Buellton and overlying landowners outside the City. The Advisory Committee conferred with a number of government and private experts during the course of its deliberations and sought input from overlying landowners.

1.1 Background:

The Santa Ynez River Water Conservation District (Parent District) was formed in 1939 for the purpose of protecting and preserving the local water resources of Santa Ynez and Lompoc Valleys and to obtain additional water supplies to meet future needs. It should be distinguished from the Improvement District (I.D. No. 1) with the same name, which obtains and sells water around the town of Santa Ynez. The Parent District covers approximately 180,000 acres in south/central Santa Barbara County and encompasses four distinct groundwater basins (Attachment 13.1). Water production within the Parent District is for domestic, municipal, industrial and agricultural purposes. Lake Cachuma is the only significant source of surface water. Most of the water used within the District is from groundwater sources.

Under the Water Conservation District Law of 1931, the Parent District has collected a groundwater charge since 1979 to supplement ad valorem property taxes (on land only) to fund its operations. The groundwater charge is based on production from owners' wells. There are currently six groundwater charge zones in the Parent District. Within each zone, there is a differential charge for agricultural water, special irrigation water (parks, golf courses, etc.), and non-agricultural water. Special irrigation water and non-agricultural water rates may be up to three and four times the agricultural rates, respectively. The zones and rates are shown in Attachment 13.2. The budget for the Parent District for July 1994-June 1995 was $310,000 (Attachment 13.3).

In 1992, the California Legislature enacted "The Groundwater Management Act", commonly referred to as AB 3030 (California Water Code & 10750 et seq; see Appendix A). The Act provides local public agencies enhanced authority over their groundwater resources. A local agency which provides water service to all or a portion of its service area and whose area includes all or a portion of a groundwater basin may adopt a groundwater management plan. Plans developed under AB 3030 may address groundwater monitoring, replenishment strategies, mitigation of overdraft conditions and prevention and control of groundwater contamination. A local agency may also exercise the powers of a water replenishment district, but is not authorized to make a binding determination of the water rights of any person or entity. To implement the provisions of a plan, an agency may impose equitable fees and assessments for groundwater management, but only if approved by an election of a majority of the voters within the identified zone. The groundwater management plan becomes established unless land owner protests representing more than 50% of assessed value are filed prior to completion of hearings on the Plan.

The Parent District Board reviewed the status of the basins under its purview and decided that it would be advantageous to initiate and support an AB 3030 planning process. One of the basins selected is the Buellton Uplands Groundwater Basin. In accordance with AB 3030, the Parent District also directly involved overlying landowners, water purveyors and local officials in the development of the Plan.

On January 11, 1994, the Parent District entered into a Memorandum of Understanding with the City of Buellton to "provide for the joint development, implementation and enforcement of a coordinated groundwater basin management plan" (Appendix B). The Memorandum designates the Parent District as the Authority having management control to adopt and implement a groundwater plan through a coordinated effort with the City pursuant to AB 3030. On April 26, 1994, the Parent District adopted a resolution announcing its intention to draft a groundwater management plan "for the purposes of implementing the plan and establishing a groundwater management program" for the Buellton Uplands Groundwater Basin. On June 7, 1994, the District appointed 12 members to a Groundwater Management Advisory Committee to provide recommendations to the Parent District Board on the components of a plan that would assure the long term availability and quality of the groundwater resources in the Basin (Attachment 13.4).

1.2 Plan Area:

The Buellton Uplands Basin generally includes the area north of the Santa Ynez River that extends eastward from the Santa Rita Uplands Basin to the east of the City of Buellton. Geologically, the Basin is bounded on the north by outcrops of bedrock, on the south by the Santa Ynez River, on the east by a limited shallow connection with the Santa Ynez Uplands Basin and on the west by a topographic divide with the Santa Rita Uplands Basin. The Basin encompasses approximately 18,600 acres. The City of Buellton lies within the Basin boundaries (Santa Barbara County, 1992; Appendices C-1 thru C-6).

The Basin is comprised of relatively unconsolidated sedimentary rocks of the Pliocene Paso Robles and Careaga Formations and to a lesser degree, the Pleistocene Orcutt Formation. The Careaga Formation is composed primarily of fine grained marine sand which overlies the non-water bearing rocks of the Sisquoc and Monterey Formations. The Paso Robles Formation overlies the Careaga and consists of non-marine sands, gravels and mudstones. The deposits of the Paso Robles and Careaga Formations fill a synclinal basin which may be an extension of the Santa Rita syncline. This basin is most likely in hydrologic continuity with similar deposits to the west in the Santa Rita Uplands Basin. The combined maximum thickness of the Basin is approximately 2,500 feet. Hydrologists familiar with the Basin have indicated that there are many confined and unconfined water bearing zones (Santa Barbara County, 1992; Appendices C-1 thru C-4) .

The Basin is dominated by agricultural land use, including horse ranches and field crops. An estimated 900 acres are irrigated for agricultural purposes. This includes alfalfa, beans, beets, vineyards and horse pasture.

The City of Buellton is the only public water purveyor in the Basin. The City, incorporated in 1992, is adjacent to the Santa Ynez River at the intersection of U.S. 101 and State Highway 246. It occupies about 950 acres near the southeastern corner of the Basin and serves a population of about 3,700 people (Santa Barbara County Association of Governments, 1994). Land use in the City is primarily residential and commercial. In 1994, the City produced 918 acre feet per year (AFY) from the Santa Ynez River alluvium and the Uplands Basin combined. The allocation was approximately 50% from each source; however, this varies from year to year based upon operational constraints (Albrecht, 1995).

The population of the City is projected to reach 5,321 by the year 2035. It is assumed that the projected increase in water use for urban purposes will be offset by a decline in agricultural demand of approximately 10% for the same timeframe (Stetson, 1992). Moreover, the City will receive 578 AFY of State Project water starting in late 1996. Use of this water by the City is expected to reduce it's use of Basin water at that time.

2.0 Purpose:

The purpose of this Plan is to provide for the safe production and quality of groundwater for beneficial use within the Buellton Uplands Basin. To achieve the Plan's objective, it is critical to develop and implement a reliable, mutually acceptable groundwater monitoring program for determining the hydrologic status of the Basin. The Plan describes various elements for monitoring and managing the Basin, including conservation measures and conjunctive use strategies, as may be consistent with the public interest.

3.0 Status of the Basin:

The status of the Buellton Uplands Basin has been a subject of controversy. Unlike many of the adjoining basins, there are very little historical data available for this area. In 1990 and 1991, the County of Santa Barbara initiated a study to obtain information on the Basin for inclusion in the County General Plan, Conservation Element. In 1992, Stetson Engineers prepared a Baseline Report for the Parent District on the status of each groundwater basin. Although both studies indicated the Basin was overdrafted, the information provided in Stetson (1992) varied considerably from the conclusions reached by the County.

Faced with this situation, the Groundwater Management Advisory Committee initiated the task of contacting additional experts. Staff hydrologists from the U.S. Geological Survey (USGS) and California Department of Water Resources (California DWR) made presentations to the Advisory Committee, reviewed some of the available data and encouraged the Committee to continue questioning and re-examining the information in the two formal studies. The Committee formed a Data Subcommittee to interview additional experts and to contact landowners with the goal of collecting as much information as possible to enable the Committee to reach reasonable conclusions on the status of the Basin. It was critical for the Committee to agree upon the basic assumptions regarding water supply and use if it were to recommend measures to the Parent District for Basin management.

The Data Subcommittee contacted Santa Barbara County Flood Control, University of California Cooperative Extension, private geologists and hydrologists in the community, and landowners who were willing to share data on their private wells. The final report prepared by the Data Subcommittee concluded that the methodology used by the County had been flawed and that the Basin was not in overdraft (Appendix C-2). This report was adopted unanimously by the Advisory Committee.

In response to a request from staff at the County Water Agency, who were uncomfortable with the findings and conclusions drawn in the Data Subcommittee report, the Advisory Committee agreed to form a Scientific Workgroup. The Workgroup was charged with determining if consensus could be reached on some or all of the key parameters that describe the hydrologic status of the Basin. Members of the Workgroup included: Rob Almy and John Ahlroth, County Water Agency; Oliver Page, Stetson Engineers; Rick Hoffman and Adam Simmons, Hoffman and Associates; and Dr. Donald Weaver, Emeritus Professor of Geology, UC Santa Barbara. At the conclusion of its study, the Scientific Workgroup reached consensus on all of the key parameters describing the hydrologic status of the Basin. The information provided in this section of the Plan is based on the consensus determinations of the Workgroup (Appendix C).

3.1 Groundwater Supply:

Sources of recharge to the Basin are precipitation falling on the outcrop areas, seepage from small creeks that flow across the outcrop area, and return flows from agriculture and (to a limited degree) municipal and domestic sources. Seepage into the older deposits in the Basin from recent alluvial deposits of Zaca Creek is expected to be significant during the winter months. The Basin is in limited hydrologic continuity with the Santa Ynez River; groundwater gradients indicate that the Basin loses some water to the river (Upson and Thomasson, 1951).

Within the Buellton Uplands Basin, the replenishment of groundwater depends predominantly on precipitation. The area has a Mediterranean climate with hot, dry summers and cool, wet winters. The growing season ranges from 240 to 270 days. Almost all rainfall occurs between November and April. Historically, there have been cycles of drought followed by abundant rainfall. The most severe dry period in the recorded history of the Basin occurred between 1944 and 1951. Average annual rainfall was almost five inches below normal; the total precipitation deficit was approximately 39 inches (Attachment 13.5).

The cyclic nature of precipitation in the Basin indicates that any groundwater planning and management be based upon long-term trends. For example, the most recent drought was terminated by a period of intense rainfall in the month of March, 1991. During that month alone, 18.60 inches fell at Lake Cachuma and 11.63 inches fell at Lompoc. Prior to that year, a number of strategies were implemented to conserve water throughout the County that were, in retrospect, criticized by water customers as premature. This experience suggests that planning should involve the use of imported (surface) water during wet and normal rainfall periods and a greater reliance on the use of replenished groundwater during drought periods (Hauge, 1994).

Deep percolation of rainfall occurs after the upper soil zones have been saturated. Thus, the years of most significant groundwater recharge occur during years of above-average rainfall. It follows that in order to estimate average annual recharge, many years of data, including both multi-year dry and wet cycles, must be considered.

Groundwater, including percolating groundwater and river subsurface flow, currently accounts for 100% of the City of Buellton's water supply. However, the City of Buellton will be able to receive and deliver it's 578 AFY entitlement of the State Project water beginning in late 1996. This will increase the reliability and the quality of the City water supply and may be used to offset the City's use of groundwater. Calculations of groundwater supply after 1996 need to reflect this additional source.

Total Basin recharge was calculated by the Scientific Workgroup convened by the Buellton Uplands Advisory Committee. Below is a table summarizing the calculations agreed upon by the Workshop (Appendices C-5 and C-7).

Recharge from precipitation:	*2742*	*AFY*	2606	
Stream infiltration:	*162*	*AFY*	162	
Underflow from bedrock:	*-0-*		0	
Total Basin Recharge:	*2904*	*AFY*	2768	-136

The method utilized for calculating stream infiltration corresponded to the soil moisture model approach used to calculate recharge from precipitation. It incorporated existing gauging station data from Zaca and Santa Rosa Creeks. There was insufficient information to calculate the underflow from bedrock, so no estimate was included in the total for Basin recharge.

3.2 Groundwater Demand:

Historically, there are few data on pumping in the Basin. Upson and Thomasson (1951) estimated that pumping increased almost steadily from a low of 2,100 AFY in 1935 to a maximum of 5,100 AFY in 1944; however, the area of their study included the Riparian Basin which accounted for the majority of the pumping described (USBR, CPA and CWA, 1994). There has been variation in estimates of gross water demand in the Basin. Stetson Engineers (1992) calculated pumpage at about 2,900 AF in 1989. The County estimated 1990 pumpage at 3,005 AF. The difference between the two pumping estimates is primarily due to the acreage attributed to alfalfa and the estimates of water application. Agricultural uses account for over 80 percent of the gross demand (Stetson, 1992).

Based on reported pumpage to the Parent District, Stetson Engineers estimated the demand in the Buellton Basin for the timeframe of July 1993-June 1994 at 1,706 AFY (Appendix C-5). This was the first year that reporting for the purposes of levying pump charges by the Parent District separated the Buellton Basin from other areas. Stetson Engineers has indicated that their prior estimates included pumpage from Santa Ynez River alluvium. This accounts for the significantly lower demand estimate for Buellton as compared to prior reports. The breakdown of reported water usage is as follows:

Agriculture: 1025 AFYAg reported + 20%	*1230*	*AFY*
Special Irrigation Water: (parks, golf courses)	*57*	*AFY*
Municipal:	*419*	*AFY*
Total: (gross pumpage)	*1706*	*AFY*

2599
1932

Agricultural usage is estimated to be 20% under-reported in the District. Accordingly, Stetson Engineers calculated agricultural demand at 1,230 AFY for this timeframe. The Scientific Workgroup used Stetson's estimate of 1,706 AF for gross demand as the basis of their report and subsequent recommendations.

3.3 Basin Trends:

Gross water in storage is equivalent to the volume of water bearing units times specific yield. The Scientific Workgroup agreed that for the purpose of determining the volume of the aquifer comprising the Buellton Uplands Basin, the bottom of the Basin is the bottom of the Careaga Formation. The specific yield of the Careaga Formation ranges from 10-30%. USGS applied a 16.85% specific yield value to the Basin in 1959; the Workgroup concluded that a 10% specific yield was appropriate. Total gross water in storage for the Basin is estimated at 1.4 million AF (Appendices C-3 thru C-6).

From the 1930's to the 1950's, groundwater levels in the Buellton Uplands Basin fluctuated as a result of irrigation pumping. Overall, groundwater levels rose from the early 1930's to the mid-1940's (USBR, CPA, and CWA, 1994). Starting in 1945, groundwater levels declined by up to 10 feet in some wells as a result of below average precipitation, but rose sharply in 1952 as a result of above average rainfall. Data from individual wells in subsequent years show a rise and fall in water levels without demonstrating any particular trend. The Workgroup agreed there are insufficient water-level data for the Basin to accurately estimate historical changes in groundwater storage at this time.

Perennial yield is an estimate of the long-term average annual amount of water which can be withdrawn from a basin under specified operating conditions (e.g. legal, economic, environmental and management parameters) without inducing a long-term progressive drop in water levels. Perennial yield can fluctuate based upon management techniques, cultural considerations, legal constraints and environmental conditions. The Scientific Workgroup emphasized that overdraft is a commonly misused term which is better described as sustained consumption beyond perennial yield. Consumption may exceed perennial yield in any year or several years, but this is not a condition of overdraft. Workgroup members also suggested that it is appropriate to use surface water during wet periods and Basin water during a drought. This conjunctive use strategy is considered good basin management and should not be confused with overdrafting a basin which would not occur unless there is a long-term downward cycle of lowered water levels in the Basin even following wet years. Again, **it is important to distinguish between a condition of overdraft-long term decline-versus the concept of overdrafting the Basin in any single year- i.e. demand exceeds recharge** (Appendix C-5).

Analyzing information from the County in its early study and additional information from individual Workgroup members, the Scientific Workgroup agreed on an estimated value of 3,000 AFY as the perennial yield for the Basin. The Basin is no longer considered to be in a condition of long-term overdraft as had been estimated by early work.

A summary of the Workgroup calculations is as follows: (Appendices C-5 and C-7).

Total Recharge	*2904*	*AFY*
Natural Discharge:	*- 156*	*AFY*
Net Recharge:	*2748*	*AFY*
Return flow from Ag use of Riparian Basin:	*+ 250*	*AFY*
Perennial Yield:	*2998*	*AFY or 3000 AFY*

In closing, the Scientific Workgroup recommended to the Advisory Committee that the existing network of monitoring wells should be expanded. After more data are gathered and evaluated in the years ahead, the newly estimated perennial yield value should be re-evaluated at that time.

4.0 Groundwater Monitoring Program:

A monitoring program is a scientifically designed surveillance system of continuing measurements, observations and evaluations. The collection of information about water levels and water quality is a critical component of any groundwater management plan. This information provides an indication of how the Basin is responding to changes in weather, demand, and water management strategies for addressing groundwater supply and water quality. By analyzing data collected from wells throughout a groundwater basin, it is possible to distinguish localized trends from those that pervade the Basin. In addition, a monitoring program can be used to identify potential future problems before they become costly to rectify.

4.1 Existing Monitoring Data:

Long-term data are available for six wells in the Buellton Uplands Basin (Attachment 13.6). The County of Santa Barbara relied significantly on data from several shallow wells (less than 190') in an area of active irrigation pumping in the Drum Canyon area for its 1990-91 review of the Basin. These wells had been monitored by the County over an extended timeframe and had shown water level declines. Several panel members pointed to data for the time period of 1978-1991 for the City of Buellton Well No. 5, a deep production well in the eastern portion of the Basin. This well indicated that water levels had not declined. A joint review of the data for the six wells led the Scientific Workgroup to suggest that it was not possible to draw definitive conclusions from current sets of well information.

Workgroup members indicated that it would be important to expand the number of wells monitored by the County to include several areas where no formal monitoring is currently in place.

In terms of water quality, the City of Buellton monitors many parameters as part of its requirement as a municipal water purveyor. Less comprehensive water quality data are available from mutual water companies in the Basin.

4.2 Expanded Monitoring Program:

Based on the recommendations of the Advisory Committee, the Parent District will expand the number of wells evaluated in the Basin to include those that are representative of a broader range of Basin areas and conditions. This effort will be coordinated with the Santa Barbara County Water Agency's monitoring effort, since the County currently monitors six wells and has agreed to add an additional three to its program. There are several overlying landowners in the Basin who have agreed to make their wells available for monitoring by the County or Parent District. In addition, the Scientific Workgroup has recommended that the Parent District put in a monitoring well in the central part of the Basin.

Basin conditions would be evaluated to determine what measures might need to be taken if it appears that the Basin is no longer in surplus. A matrix identifying well levels that would trigger a formal evaluation of Basin status will be proposed once all of the landowners contacted to include their wells in the system have formally agreed to add their wells to the monitoring system, and several years of water level data are compiled.

The Workgroup indicated that it would be helpful, though not critical to add a well at the western end of the Basin for water quality monitoring purposes.

Proposed Actions:

1. The Parent District, in conjunction with Santa Barbara County, will expand the number of wells monitored in the Basin to include areas that are not currently monitored, especially wells penetrating the main deep aquifer. Hydrographs will be prepared that demonstrate trends over time for each of the indicator wells.

2. The Parent District periodically will evaluate whether the wells selected as indicators are still appropriate for basin management, and if

necessary, either select different wells or add additional wells to its monitoring inventory.

3. The Parent District will consider establishing two wells, one in the central part of the Basin to be used for monitoring groundwater levels and another in the western part of the Basin for water quality. These actions will be reviewed periodically and considered as funds are available in the future.

5.0 Basin Management Matrix:

As described above, the cornerstone of this Plan is the establishment of an ongoing monitoring program. The Parent District will adopt a management strategy that utilizes a well monitoring program as the basis for overall Basin management. The monitoring program will encompass wells currently monitored by the County plus additional wells proposed for inclusion by Parent District consultants. As data are collected over time, the well level information will be evaluated against a well level matrix that establishes different plateaus for triggering management actions.

Until there are several decades of annual well levels collected throughout the Basin, spanning a number of weather cycles, it will be difficult to use well data as a definitive indicator of the status of the Basin. Since it now appears that there are adequate resources based on the comparison of perennial yield (3,000 AFY) with demand (1,700 AFY), the Scientific Workgroup indicated that there is sufficient time to get the monitoring plan operational as a reliable indicator of potential problems. It is expected that by 2001, there will be sufficient well level information on which to begin basing more comprehensive decisions on groundwater management. Accordingly, they did not suggest an interim formula for triggering Basin management actions.

This Plan establishes three action phases each tied to established water conservation strategies. The strategies are designed to keep the Basin from going into overdraft. A matrix will be prepared that establishes trigger points tied to each of the wells in the Basin monitoring program for the required convening of a Basin Management Oversight Committee (see Section 10). With the assistance of Parent District technical consultants, the Oversight Committee will review data on the status of the Basin and make recommendations to the Parent District regarding appropriate measures for addressing any problems identified.

Again, the action phases are triggered by Basin water level plateaus. The measures described under each phase have been fully evaluated by the Advisory Committee for both their efficacy in reducing water consumption and their appropriateness for citizens in the Buellton Uplands Basin.

The action phases are described below:

Phase 1: *The goal of this phase is to maintain the Basin in a condition of surplus by implementing measures* ***on a voluntary basis*** *that would reduce water consumption and emphasize water-efficient practices.*

Phase 2: *Activities under this phase will be implemented if Phase 1 measures fail to maintain the Basin in a condition of surplus because of drought, underestimated overdraft or if the conservation goals under Phase 1 are not attained. Phase 2 involves mandatory implementation of several key conservation measures and incentive-based voluntary measures designed to reduce water consumption and emphasize water-efficient practices. In addition, replenishment strategies could be adopted in this Phase.*

Phase 3: *Phase 3 will be implemented only if prolonged drought conditions or overdraft are not reversed by Phase 2 measures. A specific set of Phase 3 actions has not been developed at this time. Should Basin conditions suggest that Phase 3 measures need to be considered, the Parent District will convene the Basin Management Oversight Committee established by the Parent District (Section 10) to develop a set of appropriate Phase 3 measures and submit these as recommended amendments to the Plan. Amendments would then have to be considered and approved or disapproved at a noticed public hearing of the Board of the Parent District. Possible measures are likely to be more stringent variations of Phase 2 measures as well as additional mandatory provisions.*

If data on recharge and demand in the Basin reach those levels and conditions outlined in the matrix for moving from one phase to another, then the Basin Management Oversight Committee will be convened. The management matrix will be designed to provide sufficient time for the Parent District, with the advice of its Oversight Committee, to fully evaluate Basin conditions and to develop a reasonable response. Ideally, the Oversight Committee will convene prior to the point that the trigger levels for such a meeting have been attained.

The Parent District has adopted the above approach to the Basin management strategy rather than automatic triggers that would necessitate moving from one action phase to another, because historic weather cycles and average pump rates indicate that there is time to evaluate trends in Basin conditions and develop an appropriate response. The Oversight Committee could be convened either to evaluate a worsening Basin condition or when conditions indicate recovery.

Proposed Actions:

1. The Parent District will adopt a Basin management matrix that correlates key well level and water quality parameters to strategies for protecting the Basin. The matrix establishes three action phases that primarily involve water conservation measures. These action phases are intended to keep the Basin from going into overdraft.

2. The Parent District will establish a Basin Management Oversight Committee to oversee the implementation of the data monitoring and evaluation efforts. The Oversight Committee will confer with the Parent District's technical consultant in applying the matrix, and will recommend appropriate actions to the Parent District.

3. The Parent District will review its current groundwater charges to determine whether they are adequate to carry out the implementation of measures outlined in this Plan.

6.0 Conservation Measures:

The experience of local agencies during the 1991-92 drought indicates that residents are able to conserve up to 13% of their normal use through implementation of voluntary measures. The City of Buellton adopted an emergency ordinance during this timeframe. Measures included restrictions on waste, such as prohibiting watering between the hours of 10:00 a.m. and 4:00 p.m., and washing of driveways, sidewalks, parking lots and autos. City officials appealed to residents through a variety of public information vehicles, to conserve 10% of the water they were using. This voluntary approach yielded a 15% reduction in use.

Using this experience as well as guidance from the "Memorandum of Understanding Regarding Urban Water Conservation in California" (Appendices D-1 and D-2), the Parent District has identified conservation strategies for implementation for each Action Phase in the Buellton Uplands Basin. Phase 1 includes measures that are easy to implement with respect to public acceptance and therefore are most appropriate as voluntary conservation measures. They have the least financial burden. Phase 2 incorporates measures that were voluntary under Phase 1 and makes them mandatory, since they would require more effort on the part of the individual home/or property owners, are potentially more costly, and are politically more controversial. Phase 3 will include conservation measures reserved for extreme drought and overdraft conditions, and will be developed by the Basin Management Oversight Committee after the Plan is implemented and the monitoring program is well established.

Proposed Actions:

1. Using the experience of the City of Buellton during the 1991-1992 drought and guidance from the "Memorandum of Understanding Regarding Urban Water Conservation in California", the Parent District identified various conservation strategies for possible implementation within the Buellton Uplands Basin.

2. The City of Buellton, whose representatives will be included in the Basin Management Oversight Committee, may integrate both currently recommended and future conservation measures from this Plan with its existing ordinances and any conservation program requirements it may have otherwise. After consultation with the Parent District, the City may then implement the integrated conservation plan for the appropriate phase within the City, after considering its particular needs at the time.

3. The Parent District will follow an analogous procedure to implement its conservation plan outside the City of Buellton within the Buellton Uplands Basin.

6.1 Phase 1:

6.1.1 Urban Conservation Measures:

The measures listed below are proposed for implementation on a voluntary basis.

6.1.1.1 Use of CIMIS/ET (California Irrigation Management Information Service Evapotranspiration Rate).

CIMIS is a network of weather stations throughout California, operated by the California DWR, which collects weather information and calculates evapotranspiration rates (evaporative loss of water from plants and soil). The information provided by CIMIS can be used by irrigators of large turf areas such as golf courses, parks, and cemeteries to determine when and how much to irrigate. The result is improved irrigation efficiency, cost savings, and less water use.

CIMIS/ET information is available through the U.C. Cooperative Extension hotline or via modem to Sacramento. The cost to users is the cost of the phone call, if long distance. The Santa Barbara County Water Agency and the Cachuma Resource Conservation District (Cachuma RCD) jointly have developed fliers which publicize the Cachuma RCD's irrigation evaluation services. The evaluations include an explanation of CIMIS and how the data can be used in scheduling irrigation in landscaped and agricultural areas.

Implementation: CIMIS can be used at no cost to the individual and is therefore an appropriate voluntary measure for Phase 1. To increase the use of this service in the Buellton Uplands Basin, the Parent District could publicize the availability of ET information through its newsletter, the media or through direct mail to large turf area irrigators and agricultural pumpers. The Parent District could also sponsor CIMIS workshops to train irrigators in the use of CIMIS/ET information.

Potential Water Savings: It is widely recognized that properly scheduled irrigations result in more efficient water use. The precise benefits that can be realized in the Buellton Uplands Basin have not been calculated and are dependent on how efficiently systems currently are managed. However, this measure is one of the urban Best Management Practices (BMPs) adopted by urban water agencies in California and is an important component of an overall package of measures.

6.1.1.2 Showerhead Replacement Program

Replacement of older model showerheads with more efficient fixtures (2.5 gallon per minute head) is a simple, low cost measure available to residential water users. Showerhead restrictors are less effective, but are available as well. These devices can be very effective in achieving a reduction in water use. There are some concerns about the long-term value of the showerhead replacement program, because of consumer problems with the products currently on the market. These are the first devices to be removed when water shortage periods end; this is especially true of restrictors.

Implementation: The cost of a new water-efficient showerhead ranges from $5 to $25 depending on the make and model. Installation can be done by the homeowner at no cost. The Parent District and the City of Buellton could consider offering these devices at cost based upon bulk purchase. To minimize losses to the agencies, orders from water users could be obtained in advance. The Parent District and the City could also develop information in a periodic newsletter that highlights the value of these devices. The goal is to develop a habit among water users of considering opportunities for water conservation that begins with this very simple measure.

Potential Water Savings: Although water savings vary with the length of shower time, it is estimated that installation of the 2.5 gallon per minute showerhead would save approximately 7.2 gallons per person, per day or about 22 gallons per household, per day for the typical three person household. This measure is also one of the urban BMPs.

6.1.1.3 Ultra Low Flow Toilets

Federal law requires that only ultra low flow toilets be manufactured in the United States; only toilets which use 1.6 gallons per flush may be sold. Therefore, local ordinance requiring these water-efficient devices in new developments is not needed. What is advisable is a measure for encouraging water users to replace their existing fixtures with more efficient models.

There have been concerns expressed by owners of older homes about the reliability of low flow toilets; similar concerns have been expressed by individuals on septic systems. However, recent information suggests that the problems identified pertained to the first generation of low flow toilet fixtures. Moreover, there are benefits in the long-term operation and maintenance of septic systems from installing low flow toilets.

Implementation: The cost of a new low flow toilet varies from $40-$250 and this cost would be incurred by the individual water user. The Advisory Committee considered rebates as too costly an option for the City of Buellton or the Parent District. However, either of these agencies could purchase large quantities of these toilets and offer them to customers at a lower price. Alternatively, either agency could encourage the replacement of older plumbing fixtures by providing information to customers about the water saving benefits of the newer models.

Potential Water Savings: Water savings in a single family residence with three people in the household and two toilets would be approximately 42 gallons per household per day. The purchase of a new fixture could be offset in one to three years depending on the model selected and actual household use. The cost-benefit in a commercial establishment is likely to be even better.

6.1.1.4 Customer Leak Detection/Audit

One of the most effective programs for reducing urban water use, as evidenced by recent experience among California water districts, is to reduce leaks in homes and businesses. Common areas of inefficiency are toilet leaks, water softeners which run continuously or leak and problems with outdoor irrigation systems. Water audits can save a substantial amount of water for customers. The auditor, who is a conservation specialist or customer service representative, conducts an evaluation of water use indoors and outdoors of a home or business upon request. The audit includes an inspection of all water fixtures and a discussion with the owners about fixture maintenance and water use.

The audit program needs emphasis among landowners with larger landscaped parcels, especially those planted with grass or other non-drought tolerant vegetation. It is considered an urban Best Management Practice in California.

Implementation: The City or the Parent District could offer customer audits on request. These entities could promote the program through newsletters, bill inserts or ads in the local newspaper. Audits could be conducted by a staff member or by a consultant hired by several agencies. The cost for an audit for a typical residential user including indoor and outdoor use is approximately $60. This includes the cost of follow-up and tracking audit records. The Parent District could provide this service free of charge and use Parent District revenues to cover the cost. Or if the program appears to be too costly, the City or the Parent District could consider requiring that customers share part of the cost of doing the leak detection audits. As an additional option, there could be a differential charge for residential versus commercial water users. If a fee is charged, it should be priced at a level that still induces water users to avail themselves of the service, but without taking the service for granted. Water users are more likely to follow the recommendations because they have "paid" for the information.

Potential Water Savings: According to the City of Santa Barbara, an audit of a residential unit can save up to 6,000 gallons per year. Most customers have some leaks (7 out of 10 in Santa Barbara's program). This can amount to considerable water savings and meaningful cost savings as the price of water continues to rise.

6.1.1.5 Water Conservation Awards

Water conservation awards are an important educational vehicle for promoting conservation and water-efficient strategies among the public. Awards can be made for innovative ideas or the adoption of a water efficiency practice that is exemplary. Awards might include a plaque, a prize that is related to conservation (free xeriscape consultation, low-flush toilet) or cash.

Implementation: Conservation award programs are most appropriately administrated by a water agency or joint agency effort. They also can be co-sponsored by a civic organization or business in the community. Cost and labor could be shared among co-sponsors or it might be incorporated into already well-advertised community events.

Potential Water Savings: There are no quantifiable water savings from a conservation awards program. However, since these programs do provide effective public education on the need for conservation and make conservation and water efficiency "user friendly", they do result in water savings within the community as a whole.

6.1.1.6 Large Landscape Water Audits

A substantial amount of water is used in urban areas for irrigating large areas of lawn. These include golf courses, parks, cemeteries and schools. There are also multi-acre residential parcels in suburban areas that would benefit from water audits as well.

Irrigation systems often become less efficient over time. The system may be damaged, or sprinkler heads may be replaced, or other changes made to the system that make it inefficient. In addition, there may be sprinklers that overlap and therefore overspray a given area or spray onto paved areas. Automatic controls may be set to deliver too much water for too long a timeframe. A landscape water audit can identify these problems and provide recommendations on how to solve them.

Implementation: The Cachuma RCD provides landscape water audits. These audits are similar to the agricultural water audit program discussed below. The Cachuma RCD recovers about half of the cost to conduct a landscape audit. The cost to users would be approximately $700 per audit of an irrigation system and $500 for each additional system on the same property.

The Parent District could contribute to the Cachuma RCD, perhaps in cooperation with other water agencies in the County, to keep the program operating and affordable to users. Alternatively, the Parent District could establish a mechanism for subsidizing the cost to customers for a total audit or a portion of each audit conducted. Additionally, the Parent District could promote the use of the program in its overall conservation program advertising.

Potential Water Savings: A large percentage of urban water use in the Buellton Uplands Basin goes to irrigate large landscapes or turf areas. It is assumed that only cost effective improvements would be made by water users to achieve a reduction in irrigation water use. The total water saving depends on how efficiently a particular system was designed and used. It has been estimated that 15% water savings can be achieved by conducting audits on large landscaped areas every five years.

6.1.1.7 Conservation Workshops

A useful way to disseminate information to water users about conservation techniques is through seminars and workshops. Topics can vary as can the audiences targeted. Programs for teachers provide curriculum materials to use in the schools. Programs involving professional associations or vendors also are effective in providing information on new techniques or materials. Examples include workshops on xeriscape gardens and special seminars on the safe use of gray water.

Implementation: Few workshops have been offered in the Buellton area. The County Water Agency has plans to conduct a landscape workshop for homeowners. Workshops on efficient landscape irrigation for landscape managers have been held in Santa Barbara and Santa Maria at the request of water purveyors and customers in the area. The cost to the agency or sponsor need not be expensive. Most speakers will donate their time. Costs per workshop could range from $300 - $2,000 depending on the advertising costs, materials and staff time. Workshops could be sponsored and advertised by the Parent District, City of Buellton or jointly by regional School Districts.

Potential Water Savings: Again, as for other educational measures, the water savings cannot be estimated. One assumes that the knowledge gained by persons attending will translate into water savings over time.

6.1.1.8 Voluntary Conversion to Drip Irrigation

Drip irrigation can be a more efficient way to irrigate plants. Drip emitters deliver water in low volume directly to the root zone. As a result, very little water evaporates or percolates below the roots and goes unused. Urban water users can be encouraged to replace sprinklers with drip systems for groundcover and shrub areas.

Implementation; The Parent District could promote the use and benefits of drip irrigation in workshops and newsletters. The water user would pay for a new system. A study in Antioch, California indicated that the cost to retrofit a typical irrigation system for a single family home would be $200.

Potential Water Savings: The Antioch study demonstrated that there could be a 2 gallon per capita per day savings as a result of conversion to drip irrigation. This would equal 2,200 gallons per residence per year. There are no accurate statistics for the Buellton Uplands Basin suggesting how many residences have already converted and therefore the total benefits for the Basin cannot be projected. The benefit/savings is significant when conversion occurs.

6.1.1.9 Media Campaign

There are a number of local publications in the Buellton area including a newsletter published by the City of Buellton that could be used for communicating conservation and water efficiency information to the public. A media campaign could include brief conservation tips perhaps in cartoon form or a reader's suggestion column that appeared on a regular basis, well researched articles on the pros and cons of a particular strategy or more traditional agency public information announcements.

Implementation: The City of Buellton could incorporate this type of campaign into its publications. The Parent District and City could seek "free' space in private sector periodicals for public service announcements or offer informational articles to the editor for publication.

Potential Water Savings: There is no information available on how much water could be saved through a media campaign. The savings are likely to be similar to those from other educational programs such as the conservation awards or conservation workshop efforts. The goal is to have the water user think about and experiment with new ways of protecting groundwater resources.

6.1.2 Agricultural Conservation Measures

6.1.2.1 Irrigation Evaluations

Efficient use of water for agricultural irrigation relies on a properly designed irrigation system and properly timed irrigation applications. The Cachuma RCD offers an agricultural irrigation efficiency service similar to that offered for large scale landscape audits. The irrigation system and farming practices are fully evaluated. Recommendations often include fairly low cost changes.

Implementation: The Cachuma RCD has conducted over 400 evaluations in Santa Barbara County. The County Water Agency provides assistance to the Cachuma RCD by developing promotional literature about the program. The service is currently provided free of charge to farmers. A contribution of about $10,000 from the Parent District to the Cachuma RCD to cover the Basin would probably be adequate to help keep the program operating. At a minimum, the Parent District could initiate promotion of the irrigation evaluations in its conservation mailings.

Potential Water Savings. The Cachuma RCD has achieved over 20% water savings and up to 50% cost savings for agricultural irrigators as a result of their confidential, free irrigation evaluations. Since extensive acreage in the Basin is devoted to agricultural uses, there is considerable opportunity for water savings.

6.1.2.2 Greenhouse Transplants

One approach for reducing the amount of water used for certain crops is to grow seedlings in a greenhouse. Less water is lost to evaporation and percolation. The seedlings are then transplanted to the field. Large vegetable growers may establish their own seedlings rather than purchasing them from a greenhouse. Celery, cauliflower and broccoli are grown effectively in this manner.

Implementation: The Parent District could target farmers in promoting this practice.

Potential Water Savings: According to the Cachuma RCD, some crops, such as lettuce, are commonly planted as seedlings in other areas of the County, and can save as much as 30% of their total irrigation water for that crop. The average range for other crops is 20%-30%. The cost savings provide a good incentive because the cost to purchase and transplant seedlings may easily be offset by water savings costs. The amount of savings in the Basin is probably limited, because there are relatively few acres planted in vegetable crops.

6.1.2.3 Irrigation Scheduling Service/CIMIS

The most efficient way to irrigate crops is to apply only the amount of water needed for evapotranspiration and to flush salts. To accurately schedule irrigations, a farmer needs information about weather conditions and soil moisture.

Implementation. Weather conditions can be monitored through a weather station such as CIMIS. Assistance interpreting and using CIMIS is provided to farmers free of charge as part of the irrigation evaluation service provided by the Cachuma RCD. It provides information on how to use CIMIS and soil moisture information as well as suggesting system design efficiencies and irrigation schedule assistance. U.C. Cooperative Extension also provides assistance to farmers on interpreting CIMIS data.

The Parent District could publicize the availability and desirability of this program to water users. As is true of the other Cachuma RCD programs, funding support to continue the program is sought from water districts and grants. A fee for the service could be charged if necessary.

Potential Water Savings: It is widely recognized that properly scheduling irrigations is the most efficient way to use water, save energy costs and reduce runoff. There is potential for water/cost savings and higher crop yields for farmers that do not already schedule irrigations using weather and soil moisture information.

6.1.2.4 Soil Moisture Monitoring

In order to efficiently irrigate crops, it is important to know the amount of soil moisture depletion that has occurred since the last irrigation. There are a number of ways to measure the amount of moisture in the soil including use of a simple soil probe or more complex, technological devices, e.g. a neutron probe. This information is needed to properly schedule irrigation.

Implementation: Many farmers already employ soil moisture monitoring devices, but may need additional training on how to use the information, along with weather information for the proper scheduling of irrigation. There is a range of soil moisture monitoring devices that varies in sophistication and cost: the cost for a soil probe is $65-$375; a tensiometer ranges in cost from $35-$500, and neutron probes vary in price from $3,500-

$5,000. The cost for these devices should be born by the agricultural user. The Parent District could play an important role in public education on the value of efficient use of soil moisture data. The Parent District could also sponsor workshops for water users.

Potential Water Savings: Water savings and production cost savings can be considerable depending on existing practices on a particular farm, especially if use of this information is integrated with other water-efficient practices.

6.2 Phase 2

6.2.1. Urban Conservation Measures

6.2.1.1 Phase 1 voluntary conservation measures are elevated to the mandatory level if a Phase 2 condition is reached in the Basin. This includes:

- Leak detection audit;
- Large landscape water audit;
- Toilet retrofit (mandatory upon sale of property); and
- Showerhead replacement.

Implementation. It is assumed that under a mandatory program, the Parent District would require all customers that have not had an audit to have one completed. A determination of what charges to assess, if any, would have to be made at the time of implementation. The Parent District also would adopt an ordinance regarding showerhead and toilet replacement.

To oversee the programs, it would be necessary for the Parent District to hire a full or part-time staff person to provide some of these services directly, coordinate the educational component and track implementation. This staff position could be co-funded by the City of Buellton. Alternatively, the Parent District could consider hiring a staff person to serve both the Buellton Uplands and Santa Ynez Uplands.

Potential Water Savings. Full implementation of this combination of urban and agricultural (described below) conservation measures is estimated to yield a potential savings of as much as 20-30% over current use in the Basin, or 10-20% additional savings over what might be expected from a voluntary program as proposed in Phase 1.

6.2.1.2 Emergency Rationing Ordinance

During Phase 2, emergency rationing measures might include restrictions on specific watering practices such as lawn watering or washing pavement. There could be requirements to fix an irrigation system that has excessive runoff or implement the recommendations of a residential or commercial audit.

Implementation . The Parent District would have to adopt an ordinance outlining the rationing plan. This could be done in concert with the City of Buellton which has such a provision in its Water Code (Appendix D-3). There also could be fines or rate penalties for non-compliance.

6.2.2 Agricultural Conservation Measures:

6.2.2.1 Water Allotment Tied to a Pump Tax:

This measure involves imposing a tiered pump tax with increasing prices for each successive tier based on the quantity of water used over a base allocation. A "reasonable" allocation would be established for each agricultural user. That user's pump tax would be set at a lower rate for water within the allocation. For water used above the allocation, a higher rate would be charged. A water allocation could be assigned based on past use in an "average" year or water use estimates based on crop type. The differential rate would not apply to farmers whose operations were already at 85% efficiency. The formula developed would be appropriate for different types of farming operations e.g. cattle versus alfalfa production.

This approach is preferred as an agricultural conservation tool over a blanket requirement to change an owner's irrigation system or crop type. The choice of how to manage the property and business is left to the owner.

Implementation. The Parent District would adopt an ordinance outlining the conservation pricing plan. The ordinance would specify the groundwater level conditions that would trigger this plan and also its termination. The Parent District would also convene the Basin Management Oversight Committee, which would obtain input from farmers and set the appropriate allocation that would apply for individual agricultural users.

The model proposed is based on the policy adopted in Fox Canyon, Ventura County. Fox Canyon has not limited the amount of water used by an individual property owner; they have instead implemented a pricing scheme that charges differential rates when a user does not meet set conservation goals e.g. a 5% reduction in use for each 5 year period. (Appendix D-4).

Potential Water Savings. During the recent severe drought in Southern California, water savings of up to 50% were realized in some communities that used a similar approach.

6.3 Phase 3:

No specific measures have been developed for this action phase. The Parent District, in consultation with its Basin Management Oversight Committee, will develop appropriate strategies should this plateau on the matrix be approached. (See Section 10 below.)

7.0 Water Replenishment Strategies:

Although the major thrust of this Plan is the implementation of a phased approach to water conservation, it also recognizes the need for strategies to obtain additional high quality water. As has been mentioned above, the City of Buellton entered into an agreement to import 578 AFY of water from the State Water Project for use within the City. This water should result in additional high quality water percolating into the groundwater basin. This imported water will enable the Basin to conserve its groundwater resources and will be an important factor in maintaining the surplus in the Basin.

The replenishment of groundwater extracted by producers is an important management technique because it can increase the yield of the Basin. In accordance with the Groundwater Management Act, the Parent District gains the authority of a water replenishment district. Most of the powers of a water replenishment district already are available to the Parent District through the Water Conservation District Act of 1931. These powers include water replenishment projects and the ability to fix and collect fees and assessments for groundwater management, but do not include powers relating to water quality and groundwater contamination. As discussed in Section 1.1, the District already collects taxes and water production charges. This Plan includes strategies for maintaining water quality. The District may consider water replenishment projects at a later date.

8.0 Water Quality:

8.1 Overview:

Water quality data in the Buellton Uplands Basin are available from the City of Buellton and some mutual water companies on an ongoing basis and from the USGS (Hamlin, 1985). Total dissolved solids (TDS) range from 450 to 770 mg/l. Groundwater from the City of Buellton's well No. 9 has a TDS concentration of 650 mg/l. Samples of groundwater from two deep wells in the vicinity of Santa Rosa Creek had widely different measurements. TDS in the upper reaches was measured at 1840 mg/l; in the lower area the reading was 182 mg/l. The higher value may indicate that there is communication with mineralized fluids in the consolidated marine Monterey Shale (USBR, CPA, and CWA, 1994).

Groundwater in the Basin meets standards set for irrigation and is suitable for general domestic and stock use (Hamlin, 1985). Although the water might be classed as very hard (carbonate hardness), it can be softened readily for domestic use by commercial processes or home water softeners. There is no salt water intrusion problem in the Basin because of its distance from the ocean.

State Water Project water is of a higher quality than local water and could have some benefits to the Basin, because the return flow from agricultural and some urban uses would be improved. There may be some cost savings to water users who are maintaining home water softeners from either the direct use of State Water Project water or the commingling of the sources.

8.2 Monitoring Needs:

Water quality monitoring is conducted by the City of Buellton (Attachment 13.7). The City is responsible for satisfying state and federal drinking water standards. The Scientific Workgroup suggested that a well could be established in the western portion of the Basin for monitoring water quality. This will be considered by the Parent District at a later date (see Section 4.2).

Water quality information will be factored into the overall evaluation of the condition of the Basin for determining actions to be taken in accordance with the Basin management matrix, once it is developed and operational.

8.3 Groundwater Contamination Prevention:

The rule for protecting the quality of groundwater is ***PREVENT, PREVENT, PREVENT*** contamination. In the past, conventional wisdom was that anything could be dumped on the ground, since it would be diluted. While contamination in a surface water reservoir can be detected quite readily, it may take years for water in a ground water basin to move from the recharge area to the discharge area. Once it is detected, it is costly and difficult to remove. It is much cheaper to prevent contamination than to remediate a basin.

8.3.1 Wellhead Construction, Abandonment and Destruction:

Water wells connect the ground surface to an aquifer and can connect one aquifer to another. As a result, water wells may act as conduits for transmission of pollutants from the land surface to the aquifer or from one aquifer to another. The California DWR issues standards for constructing, altering, maintaining and destroying wells. If these are followed, the danger of transmitting pollution is minimized.

Records of well abandonment in the Basin are sparse. It is possible that there are a number of wells that have been abandoned and not properly destroyed and are serving as a continuous source of groundwater contamination. Some of these wells may have been abandoned long before the appropriate standards were in place; in other cases, owners simply do not know that special steps are necessary. Although there is no documented problem indicated that old wells are acting as conduits for contaminant migration, the possibility exists and needs to be addressed.

8.3.2 Septic Tank Disposal Systems:

On-site sewage disposal is effective as long as the septic tank and leach field are not overloaded or are not in direct contact with groundwater. Septic tanks and cesspools are among the most frequently cited sources of groundwater contamination in the country. Elevated nitrate concentrations in groundwater have been attributed to septic systems. Also, improper disposal of chemicals into systems can result in the release of metals and organic constituents to groundwater. Septic cleaners and drain cleaners contain hydrocarbons and chlorinated hydrocarbons which can leach into groundwater as well.

Some problems have been identified with septic systems in the Basin. Because there are a number of properties not hooked up to a sewer system, this is an area that needs constant vigilance.

Proposed Actions:

1. The Parent District, in coordination with the County Department of Environmental Health, will update and maintain an inventory of all wells in the Basin.

2. The Parent District will pursue its program for identifying wells that have been abandoned and will refer owners to the County for compliance with the appropriate abandonment procedures.

3. The Parent District, in coordination with the County, will evaluate whether the well destruction standards that apply to the Basin are adequate. Appropriate changes will be made, as necessary.

4. The requirement to abandon wells correctly and the need to maintain septic systems effectively to prevent groundwater contamination will be incorporated into the District's groundwater conservation education program.

9.0 Additional Plan Components:

As discussed above, this Plan contains several of the plan components identified in State Water Code Section 10753.7. Although conditions associated with other components are not present in the Basin at this time, these components are addressed here to provide a complete plan and to allow for amendments later. The Plan may be amended in the future to include these components if conditions change.

9.1 Control of Saline Water Intrusion:

Saline water can slowly degrade a groundwater basin and ultimately render all or part of a basin unusable. Several sources can contribute to increased salinity in groundwater. Although seawater intrusion does not occur in the Buellton Uplands Groundwater Basin, saline degradation of groundwater can be caused by use and reuse of the water supply, lateral or upward migration of saline water, and downward seepage of mineralized surface water from streams.

High quality groundwater in an aquifer can be degraded if a groundwater gradient is created that induces low quality water to flow either laterally or vertically into the aquifer. This can occur through natural or manmade pathways. In some areas this may occur naturally when confining layers in the aquifer system are deposited in discontinuous lenses. The most common manmade pathway is a well. When the problem is naturally occurring, the method of control may be to change the gradient so that the lower quality water does not flow into the aquifer containing high quality water. When the problem is caused by wells, enforcement of adequate well standards and well construction, renovation and destruction can prevent such interzonal movement of lower quality groundwater. No evidence of this condition is known at this time.

9.2 Identification & Management of Well Head Protection Areas & Recharge Areas:

The Federal Well Head Protection Program was established by Section 1428 of the Safe Drinking Water Act Amendment of 1986. The purpose of the Program is to protect groundwater sources of public drinking water supplies from contamination, thereby eliminating the need for costly treatment to meet drinking water standards. The Program is based on the concept that the development and application of land-use controls and other preventative measures can protect groundwater.

A well head protection area (WHPA) as defined by the 1986 Amendment is, "the surface and subsurface area surrounding a water well or well field supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field." The WHPA also may be the recharge area that provides water to a well or well field. Unlike surface watersheds that can be determined easily from topography, WHPA's can vary in size and shape depending on geology, pumping rates, and well construction. There are several different methods which can be used to delineate lateral boundaries of a WHPA. These include simple fixed radius techniques, analytical equation, numerical modeling, and geologic mapping. No evidence suggesting the need for such a program is known at this time.

9.3 Facilitating Conjunctive Use Operations:

Conjunctive operation of the groundwater basin is defined in California DWR Bulletin 118-80 as:

> "Operation of a groundwater basin in coordination with the surface water reservoir system. The Basin is intentionally recharged in years of above average precipitation so groundwater can be extracted in years of below average precipitation when surface water supplies are below normal."

A future conjunctive use program under this groundwater management plan may include a source of surface water in years of high precipitation, conveyance facilities to import water, recharge facilities, usable storage capacity in the aquifer, extraction facilities and distribution facilities for surface water and groundwater. Insufficient information to prepare a program exists at this time.

9.4 Construction & Operation of Groundwater Management Facilities:

Effectively managing a groundwater basin requires the planning and construction of projects that protect the quality of groundwater and assure that the quantity of groundwater in storage is managed to meet long-term demands. If conjunctive use is practiced, water distribution facilities must be planned to deliver both groundwater and surface water, depending upon the hydrologic conditions in the different regions of the state. Insufficient information exists to prepare such a program at this time.

9.5 Groundwater Contamination Cleanup Projects:

Contamination of groundwater not only results in an unusable water supply, but also poses a hazard for groundwater supplies within the same basin caused by the migration of the contamination. In some cases, it may cause a decrease in operational storage and yield of the Basin. No evidence of such conditions within the Basin is known at this time.

9.6 Groundwater Recharge Facilities:

In the future, it may be necessary to acquire, establish or construct groundwater recharge facilities to quickly replace groundwater extracted by producers. There is no evidence at this time that such facilities are needed.

9.7 Water Recycling Projects:

Demand management may be achieved by the replacement of irrigation supplies with non-potable, recycled water. Water recycling projects can relieve demands on a groundwater basin by lowering the demand for groundwater supplies for irrigation of landscaping or some agricultural uses. This Plan may be amended at a later time to make use of such water, if it is available. No such water is available at this time.

9.8 Groundwater Extraction Projects:

Conjunctive use programs deliver surface water in lieu of groundwater during surpluses, in exchange for increased extraction of groundwater during dry periods. The trade-off may result in users being asked to expand the capacity of their groundwater extraction facilities. Groundwater extraction projects also may be used to shift extraction from one part of the Basin to another as a result of contamination, hydrologic condition or recharge efforts. Conditions requiring such programs do not appear to be present at this time.

9.9 Development of Relationships With State & Federal Regulatory Agencies:

The formation of a groundwater management plan involves the development of relationships and communication strategies with a variety of state and federal regulatory agencies. Working effectively with each of these agencies requires a local groundwater management agency to understand the role of these players in regulating and managing groundwater resources.

State Water Resources Control Board (SWRCB), as the state water agency responsible for maintaining water quality standards, provides the framework and direction for California's groundwater protection efforts. Through its regional water quality control boards, SWRCB initiates statewide planning and protection programs. The Parent District may consider working with the state board and regional boards in designing and implementing groundwater protection programs.

National policy direction and consistency in groundwater protection efforts are provided by the U.S. Environmental Protection Agency (EPA). EPA provides both national guidance in state-led comprehensive groundwater protection plans and a portion of the resources needed to carry out those planning efforts.

Development of programs to assure communications will be developed over time.

9.10 The Review of Land Use Plans & Coordination With Land Use Planning Agencies to Assess Activities Which Create a Reasonable Risk of Groundwater Contamination:

In California, most land use decisions are made by city and county government agencies. The threat that a certain land use may pose to a groundwater resource is a function of the groundwater aquifer properties, management practices associated with the individual land use, and actual use of surrounding land. To assure protection of the groundwater quality in the Basin, this type of information may be taken into consideration when making land use decisions regarding zoning. A key aspect of groundwater management is maintaining quantity or supply. Land use planning decisions that lead to covering up large portions of land with impervious surfaces can increase storm water runoff. This can lead to excessive down cutting and erosion in stream channels and flooding in the lower part of the watershed. The amount of natural recharge to the groundwater basin can be significantly reduced.

The process of developing a groundwater management plan can allow for information exchange between agricultural water users, citizens and resource regulatory and planning agencies. This groundwater management plan can be used as necessary to coordinate the development of a comprehensive plan which can provide effective protection and management of the groundwater resource. Insufficient information to identify a program exists at this time.

10.0 Oversight of the Basin Management Plan:

There has been a great deal of concern expressed by local government officials and overlying landowners about approving a groundwater management plan that would permit decisions to be made by the Parent District without some degree of oversight by water users. The Advisory Committee evaluated a number of approaches for groundwater management governance, including formation of a separate conservation district or authority for the Basin. Although this approach would provide a greater say in groundwater management decisions for overlying landowners, it did not provide the confidentiality sought by landowners regarding their well information. Recognizing that the Parent District cannot "give away" its decision-making authority, the Committee prepared the following set of recommendations regarding oversight of the management plan. These have been adopted by the Parent District.

Proposed Actions:

1. The Parent District will appoint a Basin Management Oversight Committee with representation of overlying landowners similar to the membership of the Advisory Committee. Oversight Committee membership will be recruited from among the various stakeholder groups in the Basin. These groups include the City of Buellton, homeowner association/mutual water companies, and landowners involved in farming, ranching or other pursuits potentially using significant amounts of groundwater.

2. The Parent District will convene the Oversight Committee under the following circumstances:

   - On an annual basis to examine both data collected through the Basin monitoring program and any information developed regarding Basin demand and recharge. The Oversight Committee may make recommendations to the Parent District, including those involving whether new wells need to be added or substituted in the monitoring program.

   - To develop a Basin management matrix using data gathered from the groundwater monitoring program and other sources, once the monitoring program is fully operational.

   - In response to a trigger point being reached in the Basin management matrix, to prepare a recommendation to the Parent District as to whether moving to a new action phase is warranted. This would apply either to a situation in which Basin conditions appeared to be worsening as well as to Basin recovery.

- To provide recommendations to the Parent District regarding the addition or substitution of conservation measures or replenishment strategies that are not included in this Plan. These changes would require a Plan amendment.

- To develop conservation measures under Phase 3 should there be an extreme, prolonged drought or overdraft condition in the Basin that is not reversed by Phase 2 measures. These conservation measures would require a Plan amendment.

- To develop a proposal for a water allotment/pump tax measure under Phase 2 with input from agricultural users and experts that is representative of agricultural interests in the Basin.

3. The Parent District will confer with the Oversight Committee regarding any proposals that might be adopted by the Parent District that could impact overlying landowners and the management of groundwater in the Basin. Prior notice of impending decisions will be provided.

11.0 Amendments to this Plan:

This Plan may be amended from time to time after its adoption by the Parent District and City of Buellton, subject to the following requirements. First, prior to such amendment, the Basin Management Oversight Committee (see Section 10.0) will be convened by the Parent District to make recommendations regarding such amendment. Second, any such amendment to be applied within the City of Buellton will first be approved by the City Council. Finally, amendments will be considered and approved, or disapproved, only at a noticed public hearing by the Parent District Board.

12.0 Literature Cited

AB-3030, Water Code Section 10750 et seq.

Albrecht, Wm., 1995. Personal Communication (Public Works Director, City of Buellton).

Hamlin, S.N., 1985. Groundwater Quality in the Santa Rita, Buellton, and Los Olivos Hydrologic Subareas of the Santa Ynez River Basin, Santa Barbara County, California. U.S. Geol. Survey - Water Resources Investigations Report #84-4131.

Hauge, C., 1994. Presentation to the Buellton Uplands Groundwater Basin Management Advisory Committee.

Santa Barbara County Association of Governments, 1994. Santa Barbara County Regional Growth Forecast 1990-2015.

Santa Barbara County Resource Management Department & County Water Agency, 1992. Revised Draft Program Environmental Impact Report, Volume I, Groundwater Section, Conservation Element, Santa Barbara County Comprehensive Plan, Includes Appendices A & B.

Stetson Engineers, 1992. Santa Ynez River Water Conservation District, Water Resources Management Planning Process, Phase I: Baseline Data and Background Information.

Stetson Engineers, 1994. Sixteenth Annual Engineering and Survey Report on Water Supply Conditions of the Santa Ynez River Water Conservation District, 1993-1994.

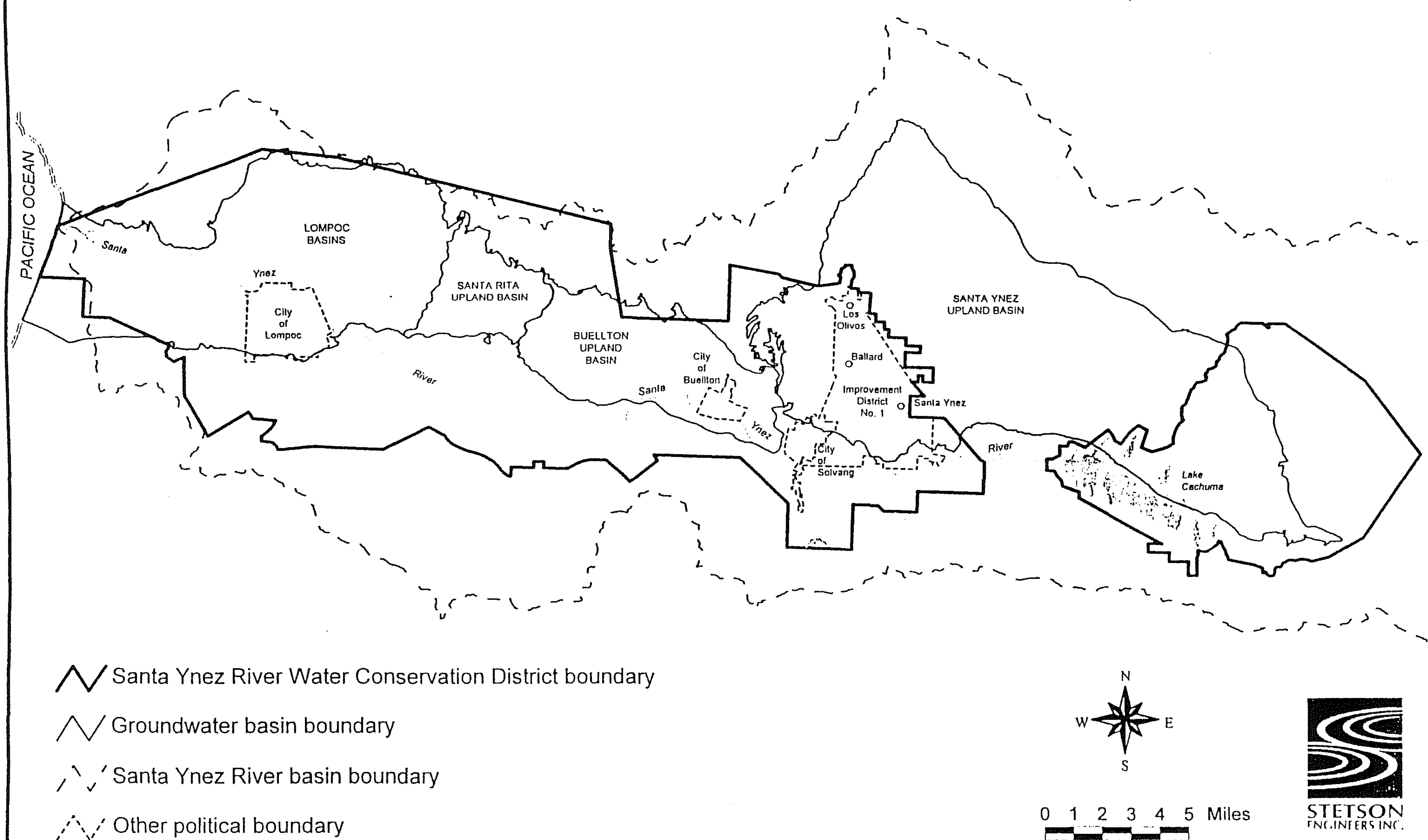
U.S. Bureau of Reclamation, Cachuma Project Authority and Santa Barbara County Water Agency, 1994. Cachuma Project Renewal Contract EIS/EIR, Hydrology Technical Report.

Upson, J.E., and Thomassen, H.G., 1951. Geology and Water Resources of the Santa Ynez River Basin, Santa Barbara County, California. U.S. Geol. Survey - Water Supply Paper #1107.

13.0 Attachments

13.1 Groundwater Basins
13.2 Groundwater Zones and Charges
13.3 Parent District Budget July, 1994-June 1995
13.4 Buellton Uplands Groundwater Management Advisory Committee Members
13.5 Annual Precipitation Graphs
13.6 Buellton Uplands Well Hydrographs
13.7 City Of Buellton Water Quality Analysis, 1994

Groundwater Basins
Santa Ynez River Water Conservation District



ATTACHMENT 1

ATTACHMENT 2

Groundwater Charge Zone

ZONE A **District portion of Santa Ynez River alluvial channel from San Lucas Bridge downstream to Lompoc Narrows.**

ZONE B **District portion of the Lompoc Plain, Lompoc Upland, and the Lompoc Terrace groundwater basins.**

ZONE C **All other portions of the District not included in Zones A, B, D, E & F.**

ZONE D **District portion of the Buellton Upland Basin.**

ZONE E **District portion of the Santa Ynez Upland Basin.**

ZONE F **District Portion of the Santa Rita Upland.**

Ground Water Charge Rates By Zone And Water Use Type

	Agricultural Water	Special Irrigation Water	Non-Agricultural Water
ZONE A	**4.89**	**9.77**	**17.10**
ZONE B	**2.74**	**5.47**	**9.58**
ZONE C	**1.77**	**3.54**	**6.19**
ZONE D	**3.32**	**6.64**	**11.62**
ZONE E	**2.40**	**4.80**	**8.41**
ZONE F	**3.31**	**6.62**	**11.59**

ATTACHMENT 3

Santa Ynez River Water Conservation District Budget

July 1, 1994 - June 30, 1995

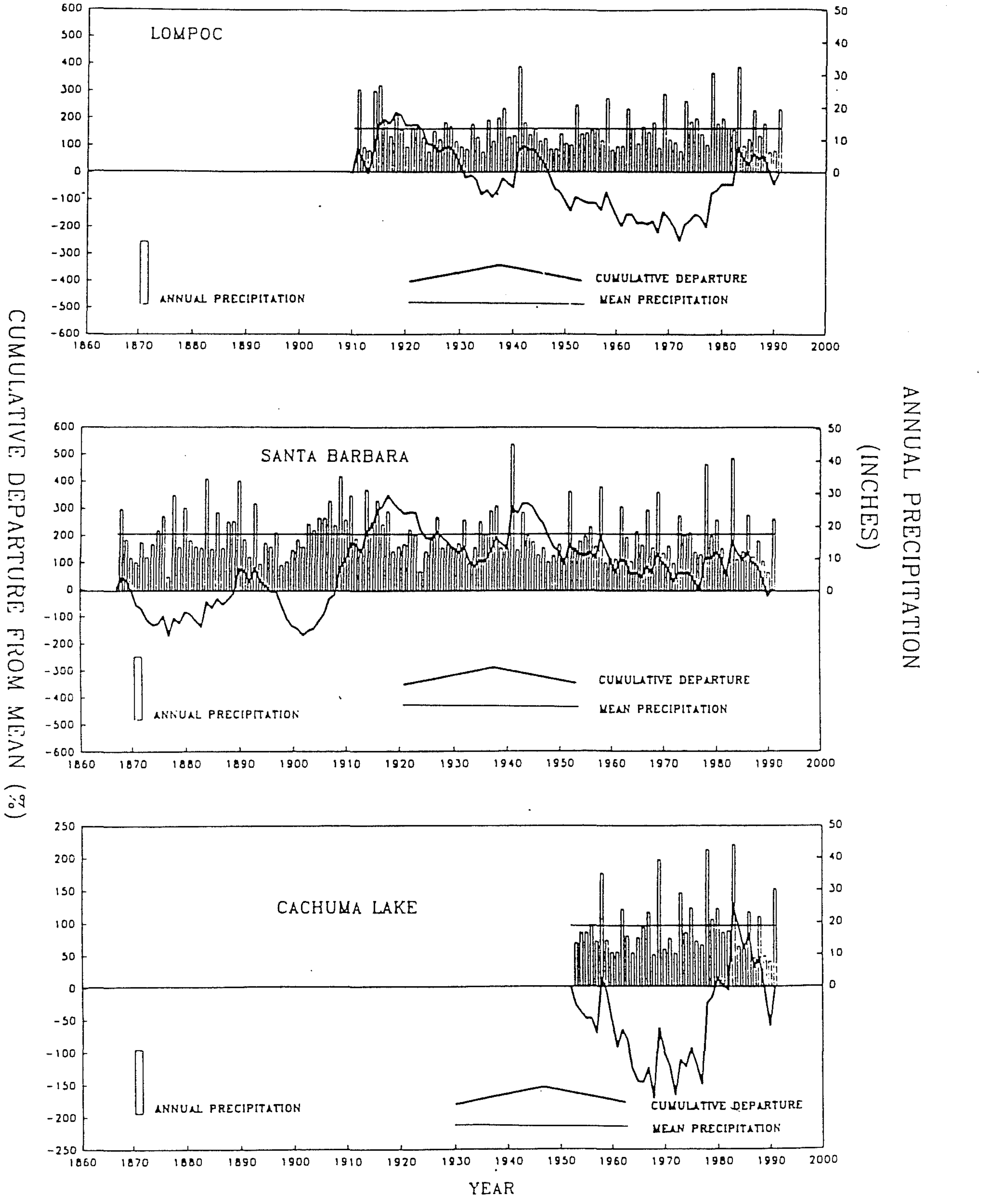
INCOME	
Groundwater Charge	$230,000.
C.D. and Interest	4,000.
S. B. Co. Taxes	100,000.
Lompoc Hydrologic (USGS)	5,850.
Water Purveyors	2,000.
TOTAL INCOME	$341,850.
EXPENSES	
Groundwater Basin Management	
Buellton Facilitator	$ 15,000.
Other (Legal/Eng.)	7,000.
Santa Ynez Facilitator	15,000.
Other (Legal/Eng.)	7,000.
Groundwater Charge Admin.	10,000.
Secretary Salary	5,550.
Director Fees	4,575.
Clerk's Salary	7,725.
Audit	3,500.
Lompoc Hydrologic (USGS)	5,850.
Office Rent	1,200.
Telephone	300.
Postage	1,000.
Office Supplies	700.
Insurance & Bonds	3,700.
Dues	1,350.
Sub-total	$ 89,450.
ATTORNEY	
General & Misc.	$30,000.
Juncal Negot./Litigation	5,000.
Jordan Litigation	70,000.
Cachuma Fishery	7,000.
SWRCB Proceedings	
WR 89-18	10,000.
Cachuma Contract Renewal	9,000.
Lompoc/Cachuma Negotiations	5,000.
USGS Monitoring	500.
SBWPA/Comp. Plan	1,000.
Sub Total (H&P)	$137,500.
Special Counsel	
Sludge	$ 500.
Sub-total	500.
Sub-total/Attorney	$138,000.
ENGINEERING	
General	$ 8,000.
Sludge	1,000.
Annual Groundwater Report	6,000.
WR 89-18 10,000.	
Cachuma EIR	10,000.
Lompoc/Cachuma Negotiations	10,000.
USGS Monitoring	200.
Jordan Litigation	30,000.
Juncal Litigation	3,000.
Tech. Comm. (Cach./Gib.)	5,000.
Sub-total (Stetson)	$ 83,200.
TOTAL EXPENSES	$310,650.
RESERVES	
Cash on hand 7/1/94	$108,700.
Anticipated gain	31,200.
Anticipated Balance 6/30/95	$139,900.

ATTACHMENT 4

Buellton Groundwater Management Advisory Committee Members

William Albrecht	Tom Laranjo
Daniel Alef	Willy Norlin
Raymond P. Amby	Pete Robertson
Ron Anderson	Thomas Schneller
Julius Blumenthal	Nancy Williams
Bill Brown	Norman Williams

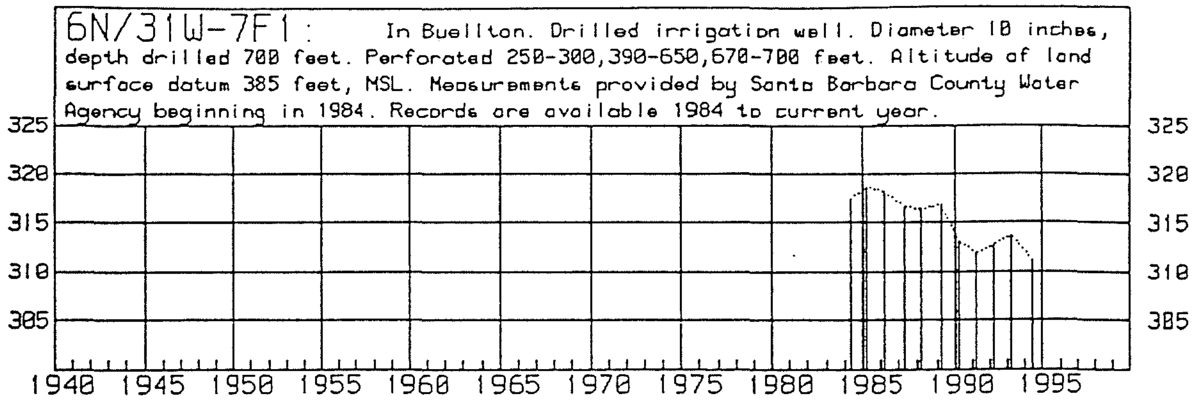
ATTACHMENT 5

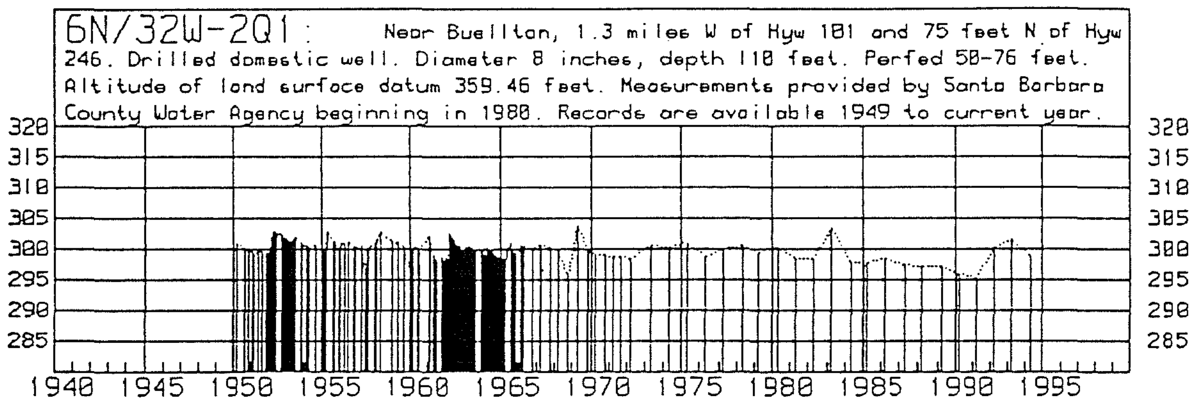


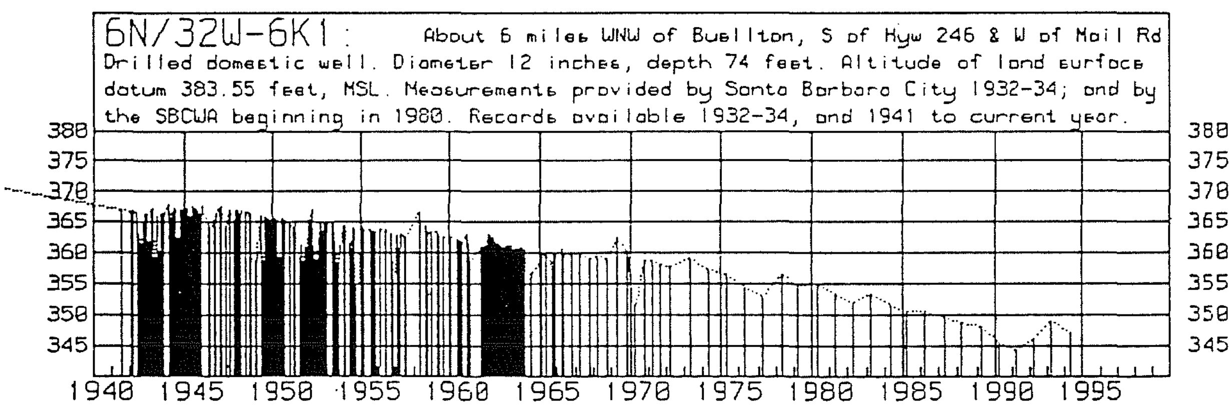
ANNUAL PRECIPITATION AND CUMULATIVE DEPARTURE FROM MEAN, LOMPOC, SANTA BARBARA AND CACHUMA LAKE, CALIFORNIA

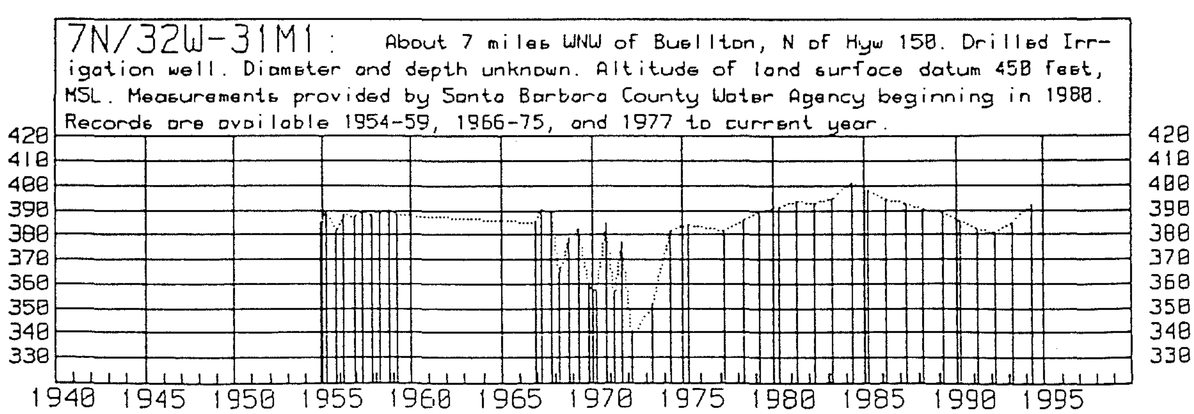
(Reference: Stetson, 1992)

ATTACHMENT 6
BUELLTON UPLANDS WELL HYDROGRAPHS



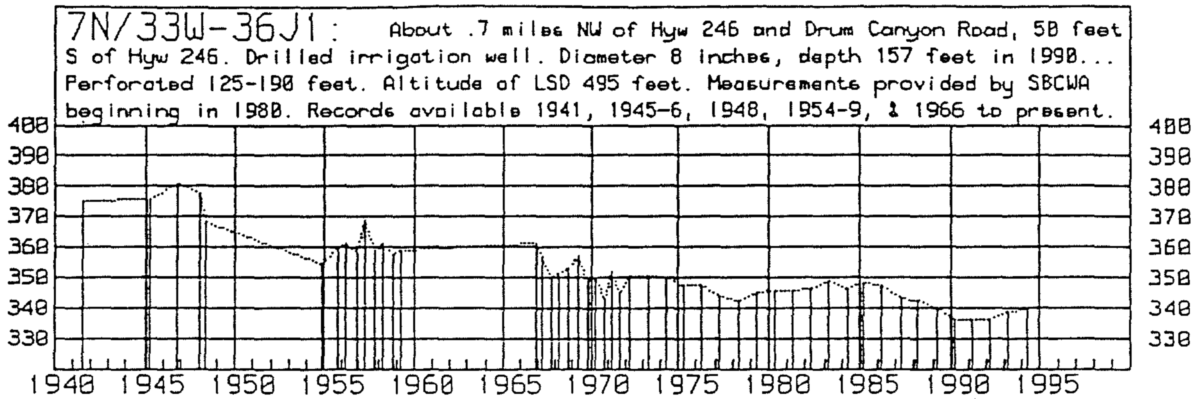


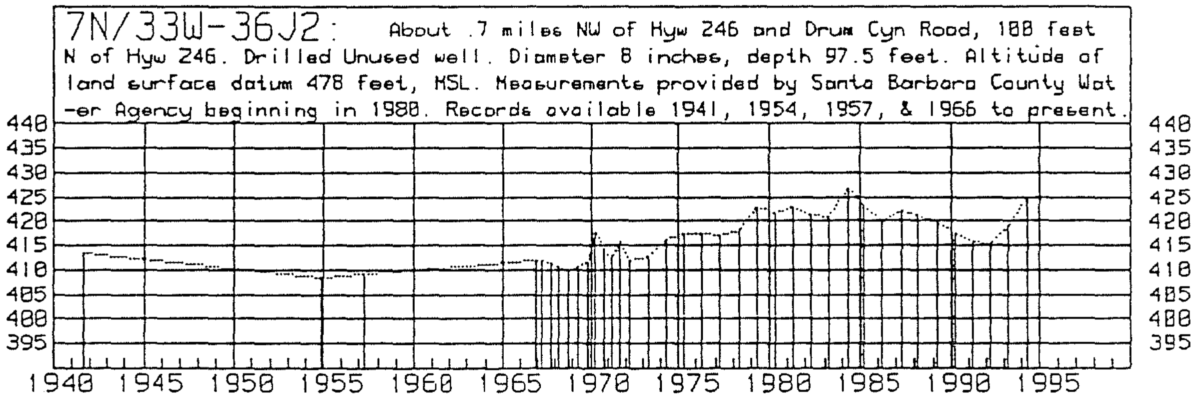




WATER LEVELS = FT, MSL ; TIME SCALE IS CALENDAR YEARS.

ATTACHMENT 6





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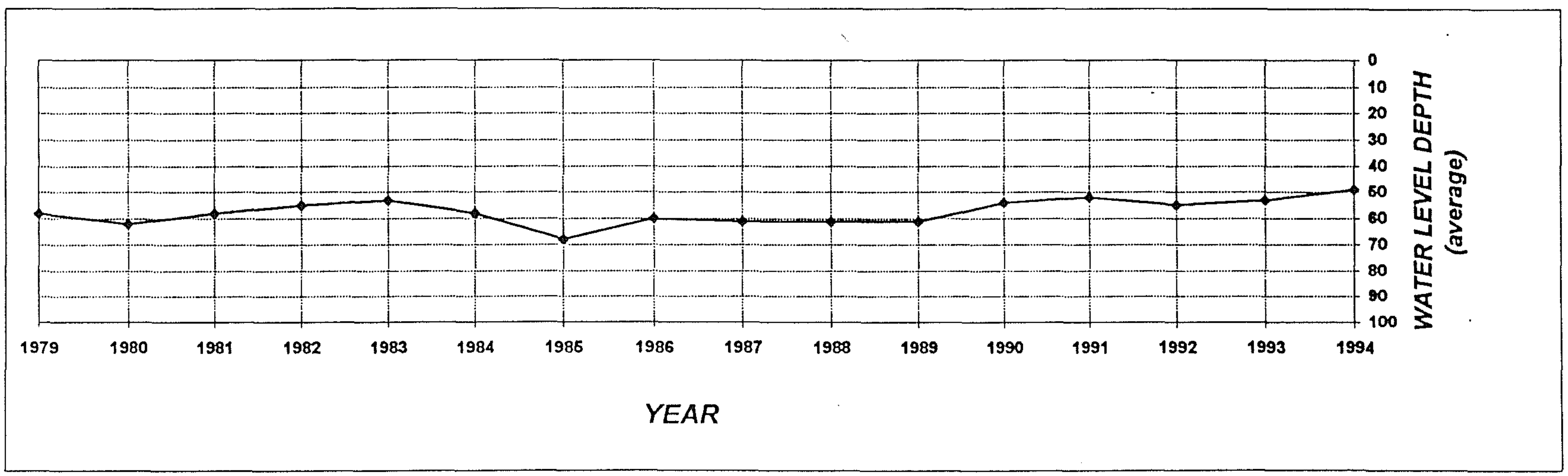
WELL HYDROGRAPH

BUELLTON CITY WELL

WATER LEVEL (feet below ground surface)	YEAR															
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
high	51	55	46	35	42	53	55	55	56	60	57	50	51	52	47	48
low	66	66	68	68	57	67	61	68	67	65	70	60	53	60	58	51
average	58	62	58	55	53	58	68	60	61	61	61	54	52	55	53	49



ATTACHMENT 7

City of Buellton

1994 WATER QUALITY ANALYSIS

PRIMARY STANDARDS - Mandatory Health-Related Standards Established by the State of California, Department of Health Services.

PARAMETER	UNITS	MAXIMUM CONTAMINANT LEVEL	SANTA YNEZ RIVER UNDERFLOW RANGE	SANTA YNEZ RIVER UNDERFLOW AVERAGE	BUELLTON UPLANDS BASIN RANGE	BUELLTON UPLANDS BASIN AVG
CLARITY						
Turbidity	NTU	0.5	.11-.34	.22	.10-.39	.24
MICROBIOLOGICAL	% Tests	10	0	0	0	0
Coliform Bacteria	Positive					
ORGANIC CHEMICALS						
Total Trihalomethanes	mg/l	0.10	N.D.	N.D.	N.D.	N.D.
Endrin	mg/l	0.0002	N.D.	N.D.	N.D.	N.D.
Lindane	mg/l	0.004	N.D.	N.D.	N.D.	N.D.
Methoxychlor	mg/l	0.1	N.D.	N.D.	N.D.	N.D.
Toxaphene	mg/l	0.005	N.D.	N.D.	N.D.	N.D.
2,4-D	mg/l	0.1	N.D.	N.D.	N.D.	N.D.
2, 4,5-TP Silvex	mg/l	0.01	N.D.	N.D.	N.D.	N.D.
Atrazine	mg/l	0.003	N.D.	N.D.	N.D.	N.D.
Bentazon	mg/l	0.018	N.D.	N.D.	N.D.	N.D.
Benzene	mg/l	0.001	N.D.	N.D.	N.D.	N.D.
Carbon Tetrachloride	mg/l	0.0005	N.D.	N.D.	N.D.	N.D.
1,2-Dibromo-3-chloropropane	mg/l	0.0002	N.D.	N.D.	N.D.	N.D.
1,4-Dichlorobenzene	mg/l	0.005	N.D.	N.D.	N.D.	N.D.
1,2-Dichloroethane	mg/l	0.0005	N.D.	N.D.	N.D.	N.D.
1,1-Dichloroethylene	mg/l	0.006	N.D.	N.D.	N.D.	N.D.
1,3-Dichloropropene	mg/l	0.0005	N.D.	N.D.	N.D.	N.D.
Ethylbenzene	mg/l	0.680	N.D.	N.D.	N.D.	N.D.
Ethylene Dibromide	mg/l	0.00002	N.D.	N.D.	N.D.	N.D.
Molinate	mg/l	0.02	N.D.	N.D.	N.D.	N.D.
Monochlorobenzene	mg/l	0.030	N.D.	N.D.	N.D.	N.D.
Simazine	mg/l	0.01	N.D.	N.D.	N.D.	N.D.
1,1,2,2-Tetrachloroethane	mg/l	0.001	N.D.	N.D.	N.D.	N.D.
Tetrachloroethylene	mg/l	0.005	N.D.	N.D.	N.D.	N.D.
Thiobencarb	mg/l	0.07	N.D.	N.D.	N.D.	N.D.
1,1,1-Trichloroethane	mg/l	0.200	N.D.	N.D.	N.D.	N.D.
1,1,2-Trichloroethane	mg/l	0.032	N.D.	N.D.	N.D.	N.D.
Trichloroethylene	mg/l	0.005	N.D.	N.D.	N.D.	N.D.
Vinyl Chloride	mg/l	0.0005	N.D.	N.D.	N.D.	N.D.
Xylenes	mg/l	1.750	N.D.	N.D.	N.D.	N.D.
Cis-1,2-Dichloroethylene	mg/l	0.006 *	N.D.	N.D.	N.D.	N.D.
Trans-1,2-Dichloroethylene	mg/l	0.01 *	N.D.	N.D.	N.D.	N.D.
1,1-Dichloroethylene	mg/l	0.005 *	N.D.	N.D.	N.D.	N.D.
1,2-Dichloropropane	mg/l	0.005 *	N.D.	N.D.	N.D.	N.D.
Trichlorofluoromethane (Freon11)	mg/l	0.15 *	N.D.	N.D.	N.D.	N.D.
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon113)	mg/l	1.2 *	N.D.	N.D.	N.D.	N.D.
Carbofuran	mg/l	0.018 *	N.D.	N.D.	N.D.	N.D.
Glyphosate	mg/l	0.7 *	N.D.	N.D.	N.D.	N.D.
Chlordane	mg/l	0.0001 *	N.D.	N.D.	N.D.	N.D.
Heptachlor	mg/l	0.00001*	N.D.	N.D.	N.D.	N.D.
Heptachlor epoxide	mg/l	0.00001*	N.D.	N.D.	N.D.	N.D.
Di(2-ethylhexyl)phthalate	mg/l	0.004 *	N.D.	N.D.	N.D.	N.D.
INORGANIC CHEMICALS						
Aluminum	mg/l	1.0	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/l	0.05	<0.01	<0.01	<0.01	<0.01
Barium	mg/l	1.0	<0.1	<0.1	0.14	0.14
Cadmium	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
Chromium	mg/l	0.05	<0.01	<0.01	<0.01	<0.01
Fluoride	mg/l	1.4 - 2.4 **	0.4-0.5	0.5	0.5	0.5
Lead	mg/l	0.05	<0.01	<0.01	<0.005	<0.005
Mercury	mg/l	0.002	<0.001	<0.001	<0.001	<0.001
Nitrate (as NO3)	mg/l	45.0	1.0-1.6	1.3	2.3	2.3
Selenium	mg/l	0.01	<0.005	<0.005	<0.005	<0.005
Silver	mg/l	0.05	<0.01	<0.01	<0.01	<0.01
RADIOACTIVITY						
Gross Alpha Activity	pCi/l	15	3.0-4.3	3.6	3	
Gross Beta Activity	pCi/l	50	4.0-5.0	4.5		
Tritium	pCi/l	20,000				
Strontium-90	pCi/l	8				
Radium 226 & 228 Combined	pCi/l	5	<1	<1	<1	<1
Uranium	pCi/l	20	4.0-5.0	4.5	4	4.0

ATTACHMENT 7

City of Buellton

1994 WATER QUALITY ANALYSIS

SECONDARY STANDARDS - Aesthetic Standards Established by the State of California, Department of Health Services

Color	Units	15	3	3	3	3
Odor-Threshold	Units	3	<1	<1	1-2	1.5
Chloride	mg/l	500	42-55	47	43.9	43.9
Copper	mg/l	1.0	<0.05	<0.05	<0.05	<0.05
Foaming Agents (MBAS)	mg/l	0.5	<0.02	<0.02	<0.02	<0.02
Iron	mg/l	0.3	<0.1	<0.1	0.1-0.2	0.15
Manganese	mg/l	0.05	<0.03	<0.03	<0.03	<0.03
Sulfate	mg/l	500	238-258	248	178	178
Zinc	mg/l	5.0	<0.05	<0.05	<0.05	<0.05
Total Dissolved Solids	mg/l	1000	663-747	705	628	628

ADDITIONAL CONSTITUENTS ANALYZED

pH	Units	No Standard	7.6	7.6	7.8	7.8
Hardness (CaCO3)	mg/l	No Standard	560-620	586	540	540
Sodium	mg/l	No Standard	42-68	56	52.7	54.7
Calcium	mg/l	No Standard	127-133	130	120	120
Potassium	mg/l	No Standard	2.1-2.3	2.2	2.8	2.8
Magnesium	mg/l	No Standard	27.3-68.8	41	34.3	34.3

N.D. = None Detected mg/l = milligrams per liter (parts per million) pCi/l = pico Curies per liter
*Proposed Maximum Contaminant Level has not been adopted **Fluoride Standard depends on temperature